Rebels without a clue: Internet exposure and political behavior in Switzerland

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Rebels without a clue

Internet exposure and political behavior in Switzerland

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Abstract

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Keywords

media effects, Internet exposure, polarization, trust in government, political knowledge, interest in politics, Switzerland

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"The irony is that in all its various guises [...] the web is already so much part of our lives that familiarity has clouded our perception of the web itself." (Berners-Lee, 1999, p. 3)

1 Introduction

In the media effects literature, the development of the Internet from a niche to a mass communication technology has frequently been singled out as a major change in today's representative democracies (Bimber and Copeland, 2013; Norris, 1999). However, despite more than two decades of research on the relationship between the popularization of the Internet and individual aspects of the political life, the overall effect has remained unclear (see Boulianne, 2009). In fact, two quite contrasting arguments regarding the role of Internet exposure for political behavior can be identified. According to the *mobilization* thesis, Internet use is linked to the alleviation of educational levels in recent decades. Hence, Internet exposure is seen to exert a positive influence on the participatory, motivational and affective aspects of individual political behavior. A second line of argumentation, in contrast, identifies the Internet as one of the drivers behind the widespread *disengagement* in established democracies (Norris, 2000). This scholarship suggests that more intense Internet usage leads to political alienation, radicalization, and a decreasing motivation to engage in politics. Both arguments are usually applied to all the different facets of political behavior, which is why studies on Internet effects come to quite conflicting conclusions. Moreover, the persistence of contradictory empirical evidence provided in support of either the mobilization or the disengagement thesis seems annoying if we consider that the Internet nowadays is part of the lives of an overwhelming number of people.

In this contribution, we try to show that part of the confusion around the effect of Internet exposure stems from an over-simplified theoretical conceptualization of the characteristics of the Internet as a politically relevant means of communication. This, in turn, has led to the misconception that the Internet affects all individual aspects of political behavior in the same way. Most importantly, political communication in the Internet is set apart from communication in traditional media by its decentralized and interactive nature. Our theoretical model takes into account these distinct characteristics of the Internet, relying on the previous literature on selective exposure, credibility verification and information cost lowering. More precisely, we expect the Internet's influence to vary depending on the different aspects of political behavior: Internet exposure leads to increasing political polarization, less individual trust in government, more interest in politics, but does not affect political sophistication. Drawing on data from the Swiss Household Panel from 2000 to 2009 as well as from 36 surveys of popular votes in Switzerland from 2000 to 2010, we assess this ambivalent overall effect of the Internet. By factoring in vote-specific instead of general Internet exposure, by controlling for other potentially influential media effects, and by applying panel and sample selection correction models, we are able to avoid some of the

limitations of previous research designs. Politicized Internet users are rebels without a clue: they are considerably more motivated, skeptical and radical in their ideological positions than the non-users; at the same time, however, they are not more sophisticated in politics. Compared to the influence of other means of communication, the Internet resembles political campaign media such as flyers but does sharply contrast more traditional media such as TV, radio, newspapers as well as official information bulletins.

2 Internet usage and political behavior

The onset of the Internet age was accompanied by studies focusing on social inequalities regarding the access and usage of the Internet (for a comprehensive overview, see Gibson et al., 2005; Zillien and Hargittai, 2009). Resource-specific attributes, such as education and income, and socio-structural characteristics, such as age or gender, were found to structure both, the access to the Internet (digital divide thesis), as well as the skillfulness of Internet usage (knowledge gap thesis). Likewise, a heightened debate broke out whether Internet exposure is positively (e.g. Horrigan et al., 2004; Negroponte, 1995) or negatively (e.g. Sunstein, 2001; Krueger, 2002) linked to democratic citizenship. In the beginnings of social science research on the Internet, observers were quite evenly divided between those predicting the Internet to lead to an increasing 'disconnection' from the offline political life and those praising its merits as a 'liberation technology' for political engagement (Shah et al., 2001, p. 141). Recent scholarly debates shifted to more particular inquiries into the relationship between Internet exposure and different aspects of political behavior (Bimber and Copeland, 2013; Lawrence et al., 2010; Davis, 2009). As Internet usage has become more common in established democracies, it is increasingly possible to break down broad questions (such as the consequences of the Internet for the quality of democracy) into more specific aspects regarding, e.g., Internet effects on political knowledge, polarization or political participation (Farrell, 2012). Astonishingly, however, not much has changed with respect to the interpretation of Internet effects. Most scholars still categorize the Internet effects on different forms of political behavior as generally optimistic or pessimistic (Xenos and Moy, 2007).

According to the optimistic 'mobilization' thesis (Norris, 2001; Nam, 2012), the Internet bears the potential of attracting new people who are underrepresented in more traditional forms of political engagement. First of all, the Internet is said to raise the citizens' ability to acquire and communicate information about politics. With decreasing information costs, an extended range of opportunities for political engagement becomes available to a growing number of individuals (Lev-On and Hardin, 2008; Quintelier and Vissers, 2008). Most notably, the Internet is expected to enable the young, who generally are not very interested in politics (Gibson et al., 2005). Further, as an interactive medium, the Internet is perceived to strengthen the linkages between citizens and political elites through online engagement processes such as online petitions, debating in political fora, micro-blogging and so forth (Di Gennaro and

Dutton, 2006). This promises let some observers to argue that the openness and equality of opportunity in Internet politics might be a solution to the 'democratic deficit' many institutions in established democracies face (Coleman and Blumler, 2009). If citizens interact more intensely with public officials, they are better able to hold them accountable, and so trust in institutions should increase (Kenski and Stroud, 2006). In sum, optimists believe that the Internet promotes democracy in a variety of ways, "typically by lowering the costs of communication, association, and participation" (Xenos and Moy, 2007, p. 706). This 'mobilization' thesis is supported by ample evidence of an activation of voters by digital campaigns in national electoral contests in the U.S., Australia and most Western European countries (see Lilleker and Jackson, 2011; McAllister and Gibson, 2011; Sudulich and Wall, 2010; Wallsten, 2010; Kluver, 2007; Marcinkowski and Metag, 2013; Tolbert and Mcneal, 2003).

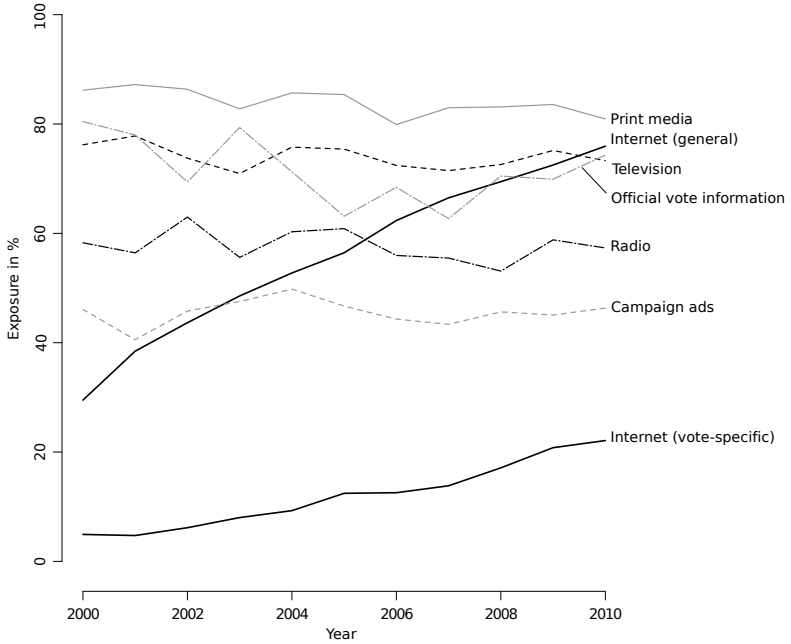
On the other hand, pessimists caution that the Internet may bring about a decline in political engagement (Sunstein, 2001; Putnam, 2001). This line of argument, which might be termed the 'disengagement' thesis, posits that individuals substitute real-life interactions with Internet usage, which exposes them more heavily to selective information exposure and thus exacerbates their political predispositions (Stroud, 2008). In addition, there are many difficulties to finding accurate political information online (Xenos and Moy, 2007). Not only the sheer volume of information may be overwhelming, but also the widespread distortion and impoverishment of knowledge in online public communication may lead to a lower capacity to understand the political world. As a consequence, feelings of alienation increase, internet users become politically more radical and have less trust in political institutions as well as a lower propensity to participate in politics (Johnson and Kaye, 2003). Disaffection may be particularly pronounced for the less educated individuals, which is why the Internet only reinforces existing participatory divides (Norris, 2001, p. 13). To conclude, pessimists maintain that the Internet might harm the political life of individuals in a variety of aspects instead of enabling them to become knowledgeable and active citizens.

Thus far, the literature has extensively tested the key propositions of both the mobilization and disengagement theses, with mixed results and no firm conclusions (Boulianne, 2009; Gibson et al., 2005; Quintelier and Vissers, 2008). As will be discussed in the following, much of this scholarly disagreement stems from an incomplete theoretical argumentation as well as from oversimplified research designs. As far as the theoretical argumentation is concerned, there is not enough emphasis on the particular nature of the Internet as a means of communication. More precisely, we maintain that the the Internet's specific network structure and interactive characteristics underlie the causal relationships between Internet exposure and political behavior such as the lowering of transaction costs, credibility verification problems and selective exposure (see Farrell, 2012). It thus seems clear that that the Internet neither generally harms nor generally benefits all different facets of political behavior.

We study the relationship between Internet exposure and political engagement in the context of Swiss

popular votes (Vox surveys) from 2000 to 2010, as well as in the context of Swiss Household Panel (SHP) surveys from 2000 to 2009, which has a number of advantages. First, most of the research so far has been conducted during election campaigns in majoritarian democracies such as the US or the UK. With its strong federalist structure and the frequent direct democratic decision-making processes, Switzerland is an interesting case which complements extant studies. Second, the data allow us to study the effect of the Internet over time. Many studies include only one electoral contest or one survey round (e.g. Wang, 2007). This makes it difficult if not impossible to discern general from time-bound effects (Xenos and Moy, 2007). We use data that reach back to the start of the more broader diffusion of Internet usage in Switzerland. In 2000, only about 25% of Swiss citizens had access to the Internet, but this number has risen to about 80% in 2010. Therefore, we are able to study the Internet effect both in the early adoption phase as well as during the time Internet use became more widespread in the general population. Third, some inquiries confuse general with specific political Internet usage (e.g. Nam, 2012), and do considerably overestimate the Internet effects on political behavior. The reason why this is the case can easily be seen by a comparison of general and vote-specific Internet exposure in Switzerland (see Figure 1). While general Internet usage has skyrocketed, usage that is related to direct democratic votes has only moderately increased. Thus, if we are interested in the effects of the Internet on political behavior, we need to concentrate on the 22% of voters who are relying on the Internet for their political opinion making, and not on the 80% of individuals living in a household with Internet access. We avoid this by focusing on vote-specific Internet usage in the Vox surveys.

Figure 1: Internet usage and media exposure in Switzerland, 2000-2010



Sources: SFSO (2012) and Lorétan (2010).

Fourth, since effects on political behavior are highly continent on the individuals online communication preferences, we will also compare different kinds of Internet exposure in the SHP data (Xenos and Moy, 2007). Fifth, if we seek to tease out specific Internet effects on political behavior, we need to control for the effect of other media on the individuals' political behavior (but see, e.g. Gibson et al., 2005; Bailard, 2011). Figure 1 shows that while the vote-specific Internet usage shows the only continuous upward trend in the Swiss media landscape, it still considerably lags behind other political information sources such as newspapers, television, radio or official campaign information provided by the public administration. We will control for these influences. Sixth, the limitation of the target group potentially induces a severe selection bias into the analyses of some studies. Some studies restrict their analyses to only specific parts of the universe of Internet users (e.g. blog readers, Lawrence et al., 2010), while others exclude the non-Internet users altogether (e.g. Wang, 2007). We use sample selection models to avoid similar problems. A final important caveat, obviously, is endogeneity. According to the best of our knowledge, only one study considers a panel analysis to corroborate the direction of Internet effects (e.g. Stroud, 2008). The SHP data used to complement the analysis of vote surveys allow us to assess the direction of the effects we find in the vote surveys over a panel of four years.

3 How the Internet affects the electorate's polarization, motivation, trust and sophistication

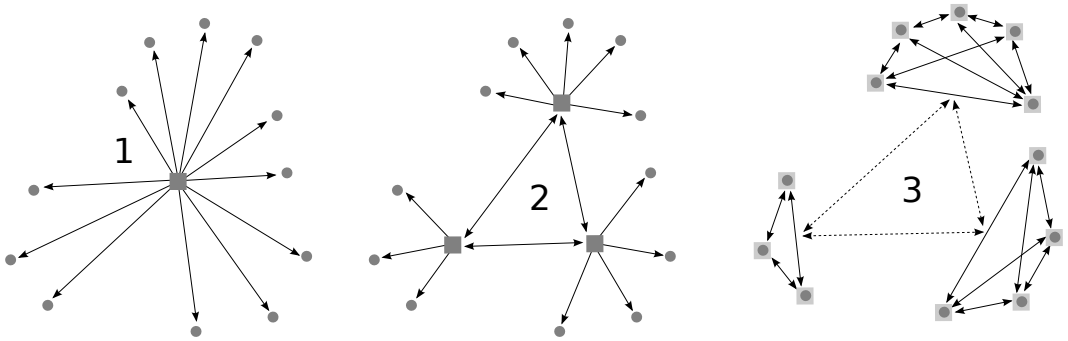
To understand the importance of the Internet for the citizen's political life, it is helpful to understand its basic communication architecture – just like institutions such as laws or social norms – to provide a set of constraints and opportunities for different kinds of political behavior (Farrell 2012, Lessig 1999). And although different Internet-based technologies may lead to somewhat different political outcomes, there are two fundamental aspects which separate the Internet from other communication media such as TV or radio. From its beginnings, the Internet has been built and extended around the improbable combination of low access barriers and decentralized control of information on the one hand and heavily monopolized provision of infrastructure on the other. This ambivalence originates in the emergence of the Internet as a communication infrastructure during the Cold War. Although maintained by the US-military, it was mainly designed by a network of scientists organized in a distinctly flat hierarchy (Rosenzeig, 1998). The centralized administration of the Internet's infrastructure is predominant until today, e.g. all domain names and Internet protocol addresses are still coordinated by one single organization (ICANN, i.e. the Internet Corporation for Assigned Names and Numbers). The usage of the Internet, however, is largely decentralized. This can most clearly be seen in the standards structuring all communication and information retrieval activities on the Internet (the TCP/IP, i.e. the Transmission Control Protocol/Internet protocol), which allow the integration of all possible kinds of communication, be it many-to-many, one-

to-one, one-to-many or many-to-many (see DiMaggio et al., 2001, 102). And 'network neutrality', i.e. the obligation of Internet providers to let pass all messages disregarding of their content, is still a major guideline for legislation in the online environment. In the absence of state censorship, this leads to the distinctly fragmented as well as interactive nature of political communication in the Internet.

Of course, the Internet also heavily integrates traditional forms of communication and many online activities in fact consist of traditional media consumption. But its information infrastructure differs from other types of media insofar as it allows for the dissemination of information among people with less intervention by central players such as journalists, or state officials. As information is produced and consumed in a more decentralized way, communication networks develop more rapidly and on an *ad hoc* basis. This resonates with Wellman's (1999) argument that with the emergence of 'global villages' the Internet contributes to the decoupling of community and geographic vicinity(DiMaggio et al., 2001). While Norris (2000) shows that the growth of private TV and radio markets has led to a fragmentation of the media system and the professionalization of political campaigns until the end of the 1990s, even more fragmentation of the media system as well as a shift from centralized to – still professionalized – but less hierarchically organized political campaigns should therefore be expected with the rise of the Internet (Sudulich and Wall, 2010; Wallsten, 2010). On the one hand, the fragmentation of media is continuing with the digitalization of traditional media as well as the emergence of a number of extensive social media networks. On the other hand, campaigns are reorganized into decentralized, more horizontal network structures, since the Internet increases the interaction between candidates or party organizations and supporters.

Figure 2 illustrates this general idea of more fragmentation and interaction in online communication. First, information in publicly controlled traditional media such as public service radio, TV or state controlled newspapers, flows from one central sender to many dispersed receivers (graph 1 in Figure 2). In Switzerland, the official information bulletin provided by the Federal Council for every vote comes closest to this type of communication. Second, private traditional media systems (graph 2) are characterized by the distinction between senders and receivers of information as well, but there is a certain division of labor among different media institutions in terms of the consumers they reach. Despite long-lasting trends towards more centralization, the radio and print media markets still possess a considerable heterogeneity of formats and ideological leanings in Switzerland. The TV market, by contrast, might be closer to the ideal type illustrated by graph 1, since it is heavily dominated by the Swiss public broadcaster (the SRF). Finally, as shown by graph 3, the Internet to some extend blurs the distinction between senders and receivers of information and leads to less hierarchical flows of information.

Figure 2: Communication networks for public service broadcasting (1), traditional private media (2) and the Internet (3)



Note: Stylized graphs, adapted and amended from Hassanpour (2014);
squares symbolize senders, dots receivers of information.

If we move from a communication infrastructure which resembles graph 1 to one similar to graph 3, three distinct mechanisms of influence on political behavior can be identified. Most intuitively, the interactive network character of the digital environment can be linked to a dramatic *reduction of transaction costs* (Lev-On and Hardin, 2008). Internet-based communication can rely on an enormous amount of information, is able to rapidly disseminate political messages and can connect like-minded people over long distances. The possible benefits of the lower cost of and easier access to information are clearly manifest in the upsurge of online collective action which is initiated by numerous political players including grassroots movements, political parties, governments and interest groups (Krueger, 2006). Accordingly, an increase in Internet exposure should thus first of all be connected to an increase in the motivational aspects of an individual's political behavior:

H 1: Internet usage increases citizen's interest in politics.

Consequently, communication in the Internet could therefore approximate "a situation of perfect knowledge" where people fast and comprehensively gain knowledge about politics (Polat, 2005, p. 453). However, authors such as Metzger (2007) caution that online communication may reduce the individuals' capacity to *verify the credibility* of the information they receive. As a consequence of the decentralized communication in the Internet, nearly anyone can be a sender of information, and messages may often not be filtered by professional gatekeepers. Additionally, online sources frequently lack information on the author identity or reputation, which increases the difficulty to judge their trustworthiness. Digital information may thus be more easily altered or misrepresented compared to the content provided by traditional media (Metzger, 2007). Since the lowering of transaction costs facilitate access to valuable political knowledge via the Internet, but problems of credibility verification work against it, the following hypothesis can be formulated:

H 2: Internet usage has no effect on citizen's political sophistication.

Besides the lowering of transaction costs and the problems of credibility verification, *selective exposure*, i.e. the selection of sources that match one's own beliefs and predispositions (see Freedman and Sears, 1963), further shapes political behavior. In contrast to past times – when (Zaller, 1992, p. 193) concluded that the majority of people is "simply not so rigid in their information-seeking behavior that they will expose themselves only to ideas that they find congenial" –, selective exposure is assumed to have become more widespread in the Internet age (Farrell, 2012). With respect to political information seeking, people can more easily choose to follow sources whose political perspective matches their own. At the same time, they expose themselves less likely to opposing views (Sunstein, 2001). Lawrence et al. (2010), for example, show that partisan blog readers are considerably more radicalized than partisan TV viewers. On the aggregate, citizen's with an intense Internet use are thus expected to be taken further away from the political center in the direction of their political predispositions (Stroud, 2010).

H 3: Internet usage is positively related to ideological radicalization.

In addition, the interactive nature of communication in the Internet makes it far more likely that individuals with unusual interests will find each other, because it vastly expands the set of actors with whom one can meaningfully interact (Benkler, 2006). Therefore, the communication networks tend to be more homogeneous online than offline, which bears the potential for a polarization of the electorate and the erosion of traditional loyalties (Morozov, 2011). Internet skeptics such as Lawrence et al. (2010) consequentially argue that going online erodes weakens real-world ties. The main reason again is selective exposure, which is why online political debates more often perpetuate traditional political borders and are followed by a relatively small and isolated population (Nahon and Hemsley, 2011). Compared to national political campaigns which are sustained by using traditional media, communication networks in the Internet thus are more prone to a decrease in trust in traditional political institutions such as the government (see Sunstein, 2001).

H 4: Internet usage leads to less trust in government.

The latter two hypotheses should not be understood as normative statements, since it crucially depends on the political context whether more radical ideological positions and less trust in government should be perceived as beneficial or detrimental to the quality of a democracy. For example, in times of corruption or political gridlock, increasing polarization and distrust in political institutions can mount pressure on decision-makers to initiate much needed reforms. In already heavily polarized countries which face a social or economic crisis, in contrast, increasing distrust and polarization may be problems that compound to the crisis.

4 Data and methods

For the principal analysis, we use data from the Swiss *Voxit*-Survey, which is collected after each referendum vote. Our data set contains 36 surveys on 98 votes between 2000 and 2010[1] with an average number of 1300 respondents by vote (popular votes take place two to four times a year in Switzerland; voting submissions are pooled to these dates depending on their number). As already mentioned, this data set includes a very specific question with regard to the use of the Internet during political campaigns, which allows us to directly assess the relationship between Internet exposure and political behavior. Furthermore, we distinguish between five different types of media exposure: Internet, newspapers, radio, TV and campaign flyers. These dummy variables are based on the following question in the *Voxit*-Survey: *How did you gather information about the vote during the campaign? Through which media did you hear about the pros and cons of the vote?* We will analyze the relationship between media use and four different aspects of political behavior: Radical ideological positions, trust in government, interest in politics and political sophistication. Each of the three dependent variables is measured as a binary variable. The indicator *radical positions* is based on the individuals' reported policy position on the left-right scale (0-10). It takes the value 1 if an individual's position is below the 25% quantile or above the 75% quantile of the distribution and 0 otherwise. *Trust in government* is coded 1 if the individual reported that he or she can *rely on our government because it acts to the best of its knowledge and belief and for the benefit of all.* This variable is coded 0 if the individual decided that the following answer was correct: *Our government increasingly decides against the will of the people. It doesn't know about our sorrows and wishes anymore.* As for *political sophistication*, we rely on two simple indicators measuring the citizen's knowledge about the votes they decided upon. If respondents could indicate the title and some basic facts about the vote, political sophistication was coded 1. If some of the asked information is wrong or missing, the variable takes the value 0. *Interest in politics*, finally, is recoded from a four-item scale into a dichotomous variable in order to keep the results of the analyses comparable across the different aspects of political behavior. Accordingly, this variable takes the value of 1 if respondents indicated that are *very interested in politics* and 0 if otherwise. Besides our main predictors, we use a range of variables to control for resources (education and income), socio-demographic determinants of political behavior (age, gender and place of residence) as well as ideological orientation (left-right placement).

Unfortunately we cannot use simple regression analyses for the obvious reason that the questions about media influence on the vote decision were only asked if the individual participated in the vote. Our data thus violate Imbens' (2004) unconfoundedness assumption. Specifically, we have a strong sample selection bias, since inferences on Internet users and non-users cannot be extended to the group of non-voters. As a remedy, the literature suggests a sample selection model (see Heckman, 1976; Imbens, 2004), which allows to include the propensity to be included in the sample into the actual outcome estimation.

[1] The question with regard to Internet use was not consistently asked before 2000.

In a first step, the selection equation is estimated, which needs an instrumental variable as an exclusion restriction. The choice of the exclusion restriction is essential, since otherwise the selection model could aggravate the selection bias, which results in confounded standard errors (Sartori, 2003). Our data is truncated according to whether people actually have participated, we thus need a variable for which there is information for all individuals in the sample, and which is closely related to participation but does not show much correlation with our main independent variables of media exposure. The *Voxit*-Survey contains a more general question with regard to the perceived frequency of participation, which asks *how often* he or she would participate if 10 votes took place in a year. In our view, this is a precise exclusion restriction. In a second step, the final model on the quantities of interest (in our case regarding political behavior) is estimated including the information on sample selection bias obtained from the first step.

Complementing the inquiries of the popular vote surveys, we are able to run panel analyses for three of the four aspects of political behavior using the Swiss Household Panel waves from 2000 until 2009. The panel consists of two random samples stratified by the seven statistical regions of Switzerland[2], one starting with 12931 individuals in 1999, the other starting with 6569 individuals in 2004. From 2000 until 2009, respondents were asked *how often they use the Internet in general*. This item is very general und thus effects of Internet use on political behavior are much less likely to be observed. Moreover, the question was asked differently in different years. From 2000 to 2003, individuals indicated the estimated time they are exposed to the Internet per week. From 2004 on, individuals indicated whether they are using the Internet *every day*, *at least once a week*, *at least once a month*, *less than once a month* or *never*. This is why we could only recover a dichotomous variable were people use the Internet weekly or not. Despite these deficiencies, the SHP panel data allow an external validation of the findings from the *Voxit* data, especially in terms of the causal direction of the effects.

Furthermore, we have data on *radical positions* – measured on a five-point scale as the deviation of ideological positions from the mean –, *trust in government* – an eleven-point scale from *no confidence* to *full confidence* –, and *interest in politics* – an eleven-point scale from *not at all interested* to *very interested*. We estimate within effect models of Internet use on these three indicators in order to control for all other potential individual covariates of political behavior.

5 How Internet exposure relates to political engagement

The estimated coefficients of the outcome equations for the models on the four aspects of political behavior are shown in Table 1. The results of the selection equations are reported in Table 3 in the appendix. At a first glance, Internet exposure shows the expected relationships with interest in politics, political sophistication, radical positioning and trust in government. While Internet use is positively correlated with interest in politics and radical positioning, it is associated with less trust in government. The

[2]Ticino, Lake Geneva region, Eastern Switzerland, Zurich, Northwestern Switzerland, Swiss Plateau.

relationship of Internet exposure with political sophistication, in contrast, is not significant. Since these results, of course, are not effective evidence on the direction of the relationships, an inquiry of SHP panel data will follow this discussion of the vote survey analysis. To illustrate the results in Table 1, we plot the simulated differences in predicted probabilities between those who used a specific media to gather information and those who did not in Figure 3.[3] Not surprisingly, the strength of the relationships between media exposure and political behavior is lower compared to participatory resources such as education. However, we find clear differences between users and non-users as well as interesting variation among media types.

According to our first hypothesis, politico-specific Internet exposure should activate citizens, and hence raise their interest in politics. As shown in the upper left graph of Figure 3, there is indeed a positive relationship between internet use and political interest. Moreover, compared to consumption of other media types, TV, radio, official information and campaign flyers, the relationship is stronger and significant. The results for political sophistication are shown in the upper right graph of Figure 3. On the aggregate over all 36 vote surveys, the results support the second hypothesis. In contrast to much of the mobilization literature, which argues with the lowering of costs argument – which argues that sophistication will increase with lower costs of access to information –, the use of Internet sources for information is not related to more political sophistication in the context of Swiss votes. This also holds for TV and radio usage, while the political knowledge of those using campaign flyers is lower than of non-flyer readers. The only media which are substantially related to a higher political sophistication are newspapers and official information bulletins.

In sum, our results point to important differences between users and non-users of the Internet with regard to motivational aspects of political behavior. However, in contrast to traditional means of communication which distribute dense information on politics, i.e. newspapers and official information bulletins, the Internet fails to enhance the political sophistication of Swiss citizens.

[3] We show the predicted probabilities for all other variables fixed at their mean.

Table 1: Voxit vote surveys: Media exposure and political behavior (outcome equations of sample selection models)[a]

	Interest in politics			*Political Sophistication*			*Radical positioning*			*Trust in Government*		
	Estimate	Std.error	Pr(>t)	Estimate	Std.error	Pr(>t)	Estimate	Std.error	Pr(>t)	Estimate	Std.error	Pr(>t)
Media exposure												
Internet	0.118	0.007	***	0.011	0.007		0.035	0.007	***	-0.041	0.008	***
Newspaper	0.083	0.006	***	0.084	0.006	***	-0.006	0.007		0.054	0.007	***
Radio	0.023	0.004	***	0.005	0.005		0.003	0.005		0.028	0.005	***
TV	0.024	0.005	***	0.006	0.005		-0.026	0.005	***	0.000	0.006	
Official information	-0.002	0.005		0.051	0.005	***	-0.053	0.005	***	0.099	0.006	***
Campaign flyer	0.025	0.004	***	-0.009	0.004	*	0.024	0.005	***	-0.016	0.005	**
Education[b]												
Vocational	0.044	0.008	***	0.033	0.009	***	-0.010	0.009		0.014	0.010	
Secondary	0.091	0.009	***	0.057	0.009	***	0.008	0.010		0.085	0.011	***
Higher secondary	0.157	0.011	***	0.056	0.011	***	0.023	0.012	*	0.084	0.013	***
Tertiary	0.195	0.010	***	0.075	0.010	***	0.064	0.010	***	0.151	0.011	***
Monthly income[c]												
3'001-5'000.- CHFr.	-0.021	0.008	**	0.002	0.008		-0.036	0.009	***	0.002	0.009	
5'001-7'000.- CHFr.	-0.026	0.008	**	0.025	0.008	**	-0.046	0.009	***	-0.008	0.009	
7'001-9'000.- CHFr.	0.000	0.009		0.052	0.009	***	-0.035	0.009	***	0.049	0.010	***
> 9'001.- CHFr.	0.042	0.009	***	0.041	0.009	***	-0.041	0.009	***	0.075	0.010	***
Age	0.003	0.000	***	-0.002	0.000	***	-0.003	0.000	***	0.000	0.000	*
Gender (ref=female)	0.058	0.004	***	0.032	0.004	***	0.048	0.005	***	0.005	0.005	
Location (ref=rural)	0.003	0.005		0.011	0.005	*	0.020	0.005	***	0.023	0.005	***
Ideological position[c]	-0.006	0.001	***	-0.002	0.001		-0.003	0.001	**	-0.019	0.001	***
Intercept	0.010	0.019		0.313	0.020	***	0.599	0.021	***	0.632	0.022	***
Vote fixed effects		Yes			Yes			Yes			Yes	
Error terms												
sigma	0.454	0.002	***	0.461	0.002	***	0.487	0.002	***	0.478	0.002	***
rho	-0.451	0.011	***	-0.113	0.015	***	-0.215	0.013	***	-0.085	0.015	***
N (censored/observed)	71044 (24931/46113)			71271 (24931/46340)			71271 (24931/46340)			64433 (24931/39502)		
Log-Likelihood	-56324.92			-59108.72			-61346.19			-54248.99		

Notes: P-values: p ≤ 0.001=***, p ≤ 0.01=**, p ≤ 0.05=*.
[a] Logit coefficients, standard errors and levels of significance of tobit 2 models with Newton-Raphson maximization.
[b] Ref=Compulsory education.
[b] Ref=Monthly income (< 3'000.- CHFr.).
[c] 10-item scale from 0 = left to 10 = right.

The graph in the lower left corner of Figure 3 shows the differences in predicted probabilities to have a radical political positioning. In line with our third hypothesis, Internet users appear to have a significantly higher propensity to take a radical position than non-users. The same goes for those who used campaign ads and flyers for their vote choice; furthermore, newspaper readers are also slightly more likely to have extreme political positions. In contrast, the government's official information and TV seem to have a moderating effect: those who read or view about the pros and cons of a vote in these media tend to have more moderate positions than those who do not. The effects of newspaper reading and radio listening remain unclear. The last hypothesis posits that Internet usage should be associated with less trust in the political system, because it leads to political fragmentation. In line with this hypothesis, the lower right graph of Figure 3 shows that unlike other media – such as the government's official information, newspapers and radio – the Internet is related to *less* trust in government. As for other media types, only campaign advertisement is also negatively related to trust in government, but the differences between users and non-users are much smaller.

These results support the distinction between hierarchical and more decentralized communication networks that was put forward earlier: The official information bulletin that is issued by the federal Council before each vote can be described as an information flow from one central sender to many dispersed receivers. Hence, it has a moderating effect on political preferences and consumers of this type of information tend to have more confidence in the political elite. By contrast, political content distributed on the Internet, as well as via campaign flyers can be seen as decentralized, well-targeted, and therefore more polarizing information flows. As our results show, campaign flyers and information gathering via the Internet are both related to a more radical position and less trust.

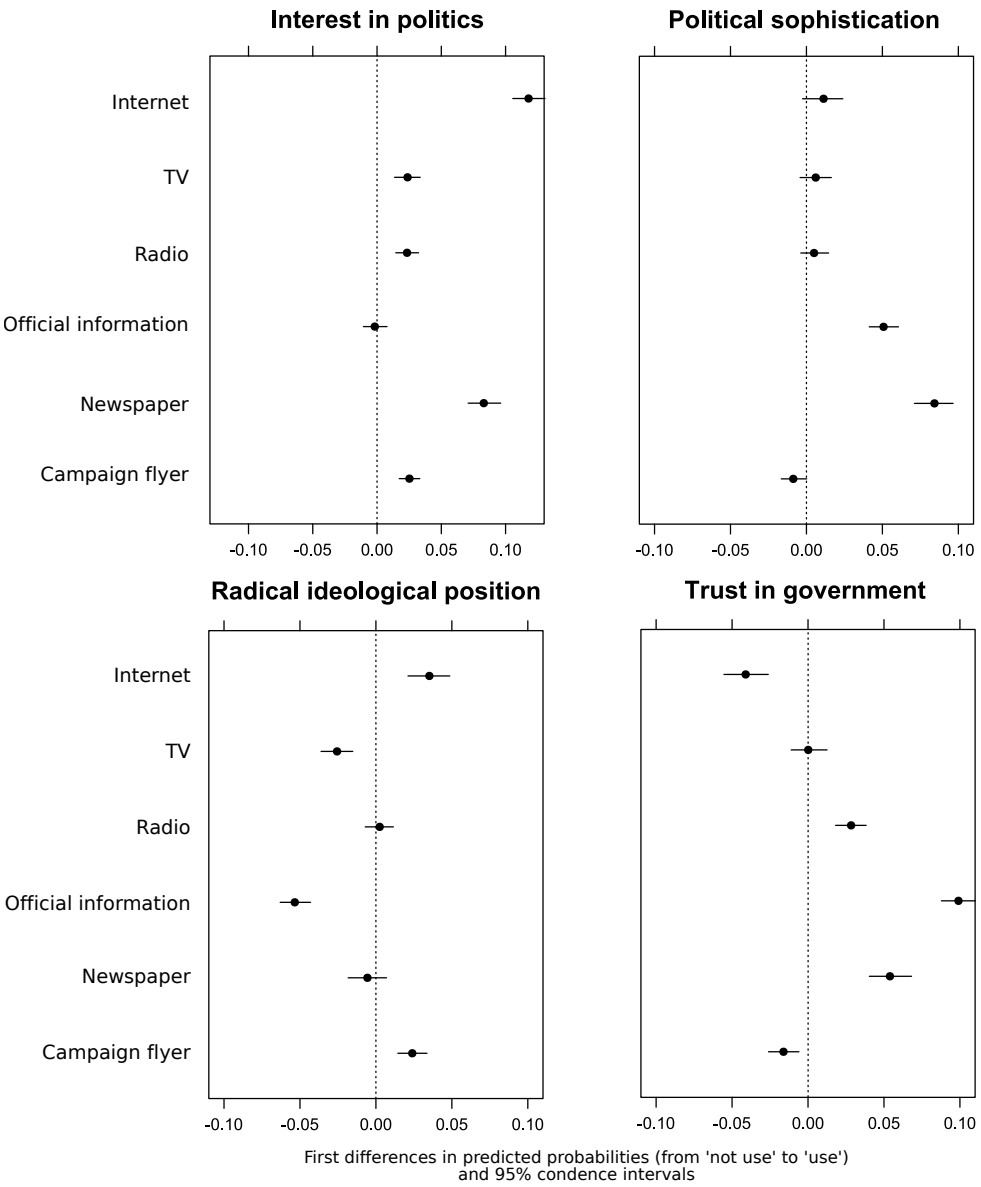


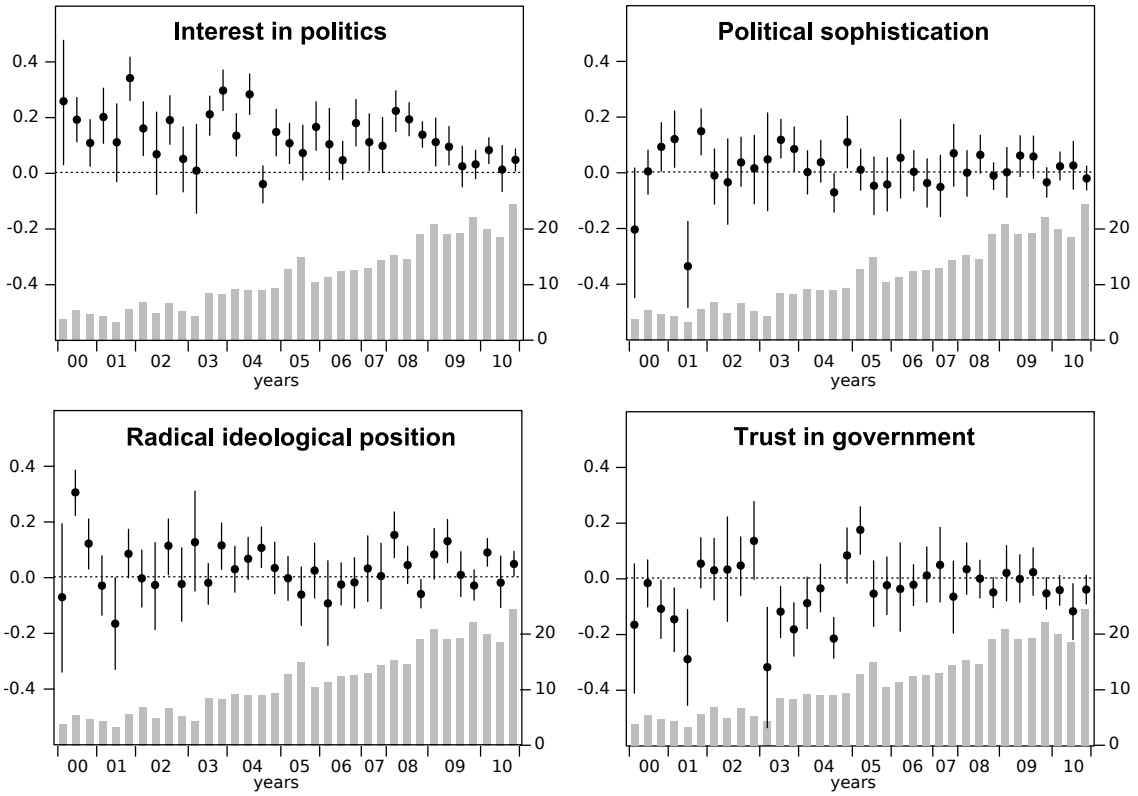
Figure 3: Media use and political behavior

Overall, our findings point to a consistent relationship between Internet use and different aspects of political behavior. Internet users tend to have more radical preferences, are less confident in the government's work, but also more interested in politics than non-users. Even though the differences are fairly small, they are comparable to the effects of other media types and indicate that the use of the Internet to gather political information is related to a certain political behavior. Besides, our results show the expected effects for those factors that are described in the traditional literature on political participation (see Gallego, 2010): resources and socio-demographic characteristics (see Table 1). Education leads to more trust, political sophistication and increasing interest in politics. In addition, there is no clear association between education and radical positioning. Income is negatively related to extreme positions but positively connected to sophistication. As far as trust in government and trust are concerned, their relationship with income is less clear. Furthermore, elder people show more trust

and interest in politics but do also exhibit less political sophistication and moderate ideological positions. Men tend to have more interest and political knowledge, and also hold more radical positions. Finally, urban and ideologically left-leaning individuals are more interested, sophisticated, radical and trustful than their rural and right-leaning counterparts. Albeit not the focus of our study, these results support the robustness of our findings with regard to media use and political behavior, which persist even if we control for these 'strong' predictors of political behavior.

6 Robustness of the findings

So far, the connection between Internet exposure and political behavior was only explored at the most aggregate level – over all votes – which makes it impossible to explore time-bound effects. In a first step, we thus include interaction terms between Internet usage and the each vote in the original model as shown in Table 1 (Results are shown in Table 3 in the appendix). Figure 4 shows the trends of the differences in predicted probabilities (left scales) from these models along with the share of Internet users (grey bars, right scale). It is striking that for all aspects of political behavior, the initial phase from 2000 until about 2003 is distinctly different from the later periods. In the early years, the effects are very volatile due to the low number of Internet users and tend to settle in only after about 2004. After 2004, the share of Internet users increases to above 10% and the predictions become more consistent. Nevertheless, the relationship between the Internet and political behavior seems somewhat contingent on the single votes. For all aspects of political behavior, Internet exposure has no significance at some votes. The results discussed above could thus simply be spurious and due to a mis-specification of the research period. In a second step to solidify our findings, we therefore ran the models only for the subsamples of votes from 2004 on – where Internet usage is above 8% – as well as from 2005 on – where Internet usage is above 10% (Results not shown). In both cases, the findings as shown in Figure 3 remain robust.



Left: First differences in predicted probabilities (from 'not use' to 'use') and 95% confidence intervals
Right: Share of Internet users among participants in direct-democratic votes (in %)

Figure 4: Internet exposure and political behavior over time

In addition, we varied the inclusion of control variables. Most notably, since Gallego (2010) in general suspects problems due to multicollinearity between income and education, we subsequently excluded income and education from the models. Only one Internet effect is affected by these changes. Namely, the models without either income or education excluded show a positive and significant relationship with political sophistication. However, since this effect disappears when we repeat the analysis for the subsample of votes where Internet use is above 10%, it seems that – if at all – this is a phenomenon of the early and very volatile phases of Internet usage.

Thus, the main findings of the *Voxit*-Analyses seem robust, although at least two major problems remain. First, for the early periods of Internet usage, there are not enough reliable data to estimate stable effects. And second, the pooled survey data on popular votes provide evidence on the significance of the relationships, but we still do not know whether the direction of the effects is as suggested by the hypotheses. The SHP analyses presented in Table 2 offer potential answers for the three aspects of political behavior for which we found substantial correlations in Table 1. The effects of Internet usage, measured as whether individuals used the Internet in general at least once a week, on *interest in politics*, *radical positioning* and *trust in government*, all show the same sign as in the *Voxit*-Analyses.

Table 2: Swiss Household Panel: Internet exposure and political behavior (linear unbalanced panel models)

	Interest in politics			*Radical positioning*			*Trust in Government*		
	Estimate	Std.error	Pr(>t)	Estimate	Std.error	Pr(>t)	Estimate	Std.error	Pr(>t)
Internet use	0.110	0.022	***	0.030	0.017	+	-0.039	0.022	+
Individual fixed effects		Yes			Yes			Yes	
N		59526			51660			58005	
n		13747			12752			13529	
Years		9			9			9	
Adj. R^2		0.0004			0.0001			0.0001	
F-statistic		26.24*** (1/45778 DF)			2.94+ (1/38907 DF)			3.18+ (1/44475 DF)	

Notes: P-values: $p \leq 0.001$=***, $p \leq 0.01$=**, $p \leq 0.05$=*., $p \leq 0.1$=+

Furthermore, as we have already seen with regards to the *Voxit*-Analyses, the effects are fairly small. Weekly Internet usage increases the propensity that a person is one category more interested in politics by 11%. As for radical positioning, Internet users are 3% more likely to have one point more deviation from the mean ideological position than non-users. Finally, Internet exposure lowers trust in government by 4%. The results in terms of radical positioning and trust in government are only significant at the 10% confidence level. However, given that the Internet variable measures general and not politico-specific Internet usage, the effects could not have been expected as clear as in the *Voxit* data.

7 Conclusion

This paper studies the ambivalent effects of internet use for information gathering on different aspects of political behavior. The specific network and interactive characteristics of communication in the Internet involve distinctive mechanism of influence on the individuals political behavior. People who are getting informed about politics online are subject to selective exposure and more problems of credibility verification, but, at the same time, profit from a lowering of information and communication costs. We found clear differences between Internet users and non-users in terms of the effects of these mechanisms. First, the results provided support of the *disengagement* thesis in terms of polarization and trust in national government. Internet users seem more likely to take a radical ideological position than non-users. This resembles the effect of exposure to campaign flyers. Other media, and especially the exposure to the government's official information, on the aggregate relate to more moderate positions. Unlike traditional media, Internet usage also is connected to less trust in government. Thus, it is not the case what we know from offline media exposure, namely that more informed citizens have more trust in national political institutions. In terms of political interest, however, the results confirm the mobilization thesis: Similar to other media, Internet users are more likely motivated to engage in politics than non-users. All these

results do not only show up in the *Voxit* analyses, but also in the SHP panel analyses. However, one of the most often stated expectations on the influence of the Internet, namely that it increases political sophistication due to the better availability of and faster access to information in the Internet, is not confirmed. In general, Internet use is not related to more knowledge, which might partly be due to the greater insecurity to assess the quality of the information.

Our analyses of surveys on popular votes in Switzerland thus provided solid empirical results on Internet exposure by considering only vote-specific Internet exposure, by controlling for exposure to other potentially influential media, by studying an extended time period, and by providing a robustness check with an alternative data set. Overall, the Internet effect is fairly small compared to socio-structural predictors, but this should have been obvious from the beginning. Media exposure will never precondition political behavior as strongly as long-standing individual characteristics such as education. Compared to other media effects, however, the results for Internet exposure are remarkably strong, which is especially interesting if we take into account the fact that much less respondents indicated that Internet usage was important for their vote decision than the usage of other media such as the press, radio, or TV.

Taken together, the effects of Internet usage sharply contrast with those of other media and especially with the official information bulletins in terms of polarization and trust in government, while they are similar in terms of interest in politics. It therefore seems to resemble more a campaign media, which polarizes but, at the same time, motivates citizens. On the one hand, this can be interpreted as a confirmation of the argument that the rise of the Internet has been related to more fragmentation of the media system as well as a shift from centralized to but less hierarchically organized political campaigns. On the other hand, the cost reduction for information seeking and peer-to-peer communication in the Internet indeed seem to have a mobilizing effect. The main take from our analyses is thus that the Internet has neither a completely beneficial nor a completely detrimental, but a rather ambivalent influence on political behavior in Switzerland. To put it plainly, Internet users are rebels without a clue. They are interested, polarized, and sceptical, but they do not know more than non-users.

Appendix

Table 3: Voxit vote surveys: Selection equations of sample selection models[a]

	Interest in politics			*Political Sophistication*			*Radical positioning*			*Trust in Government*		
	Estimate	Std.error	Pr(>t)	Estimate	Std.error	Pr(>t)	Estimate	Std.error	Pr(>t)	Estimate	Std.error	Pr(>t)
Perceived voting frequency	0.343	0.002	***	0.340	0.002	***	0.340	0.002	***	0.339	0.003	***
Education[b]												
Vocational	0.111	0.022	***	0.102	0.022	***	0.104	0.022	***	0.093	0.023	***
Secondary	0.114	0.025	***	0.106	0.025	***	0.108	0.025	***	0.087	0.026	***
Higher secondary	0.212	0.031	***	0.202	0.031	***	0.202	0.031	***	0.205	0.032	***
Tertiary	0.192	0.026	***	0.184	0.026	***	0.186	0.026	***	0.158	0.027	***
Monthly income[c]												
3'001-5'000.- CHFr.	0.059	0.022	**	0.075	0.022	***	0.074	0.022	***	0.069	0.022	**
5'001-7'000.- CHFr.	0.096	0.022	***	0.116	0.022	***	0.114	0.022	***	0.117	0.023	***
7'001-9'000.- CHFr.	0.147	0.023	***	0.166	0.023	***	0.164	0.023	***	0.177	0.024	***
> 9'001.- CHFr.	0.178	0.024	***	0.199	0.024	***	0.197	0.024	***	0.202	0.025	***
Age	0.009	0.000	***	0.009	0.000	***	0.009	0.000	***	0.009	0.000	***
Gender (ref=female)	0.031	0.012	*	0.024	0.012	.	0.024	0.012	*	0.038	0.013	**
Location (ref=rural)	0.029	0.013	*	0.026	0.013	*	0.025	0.013	*	0.021	0.013	
Ideological position	-0.012	0.003	***	-0.011	0.003	***	-0.011	0.003	***	-0.004	0.003	
Intercept	-3.234	0.047	***	-3.222	0.048	***	-3.224	0.047	***	-3.355	0.050	***
Vote fixed effects		Yes			Yes			Yes			Yes	
Error terms												
sigma	0.454	0.002	***	0.461	0.002	***	0.487	0.002	***	0.478	0.002	***
rho	-0.451	0.011	***	-0.113	0.015	***	-0.215	0.013	***	-0.085	0.015	***
N (censored/observed)	71044 (24931/46113)			71271 (24931/46340)			71271 (24931/46340)			64433 (24931/39502)		
Log-Likelihood	-56324.92			-59108.72			-61346.19			-54248.99		

Notes: P-values: p ≤ 0.01=***, p ≤ 0.05=**, p ≤ 0.1=*.
[a] Logit coefficients, standard errors and levels of significance of probit selection models.
[b] Ref=Compulsory education.
[b] Ref=Monthly income (< 3'000.- CHFr.).

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